

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

--	--	--	--	--	--	--	--	--	--

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2018/2019

BFN1014 – FINANCIAL MANAGEMENT 1

(All sections / Groups)

29 May 2019
2.30 pm – 4.30 pm
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of (9) NINE pages excluding cover page.
2. **SECTION A: 20 Multiples Choice Questions.** Please shed your answer in the OMR sheet provided.

SECTION B: 4 Structured Questions. Answer **ALL FOUR** questions in the answer booklet provided.
3. Marks allocations are shown at the end of each question.

SECTION A: MULTIPLE CHOICES QUESTIONS (40%)

- 1) Holders of equity capital
 - (a) own the firm.
 - (b) receive interest payments.
 - (c) receive guaranteed income.
 - (d) have loaned money to the firm.

- 2) All of the following features may be characteristic of preferred stock EXCEPT
 - (a) callable.
 - (b) no maturity date.
 - (c) tax-deductible dividends.
 - (d) convertible.

- 3) Another term sometimes applied to a common shareholder is a
 - (a) fundamental or basic owner of the firm.
 - (b) residual owner of the firm.
 - (c) net owner of the firm.
 - (d) reciprocal owner of the firm.

- 4) If a person's required return does not change when risk increases, that person is said to be
 - (a) risk-seeking.
 - (b) risk-indifferent.
 - (c) risk-averse.
 - (d) risk-aware.

- 5) The _____ of an asset is the change in value plus any cash distributions expressed as a percentage of the initial price or amount invested.
 - (a) return
 - (b) value
 - (c) risk
 - (d) probability

Continued...

- 6) Risk aversion is the behavior exhibited by managers who require a greater than proportional _____.
- (a) increase in return, for a given decrease in risk.
 - (b) increase in return, for a given increase in risk.
 - (c) decrease in return, for a given increase in risk.
 - (d) decrease in return, for a given decrease in risk.
- 7) The _____ is the rate of return a firm must earn on its investments in projects in order to maintain the market value of its stock.
- (a) net present value
 - (b) cost of capital
 - (c) internal rate of return
 - (d) gross profit margin
- 8) _____ is the risk to the firm of being unable to cover operating costs.
- (a) Total risk
 - (b) Business risk
 - (c) Financial risk
 - (d) Diversifiable risk
- 9) The firm's optimal mix of debt and equity is called its _____.
- (a) optimal ratio.
 - (b) target capital structure.
 - (c) maximum wealth.
 - (d) maximum book value.
- 10) All of the following are weaknesses of the payback period EXCEPT
- (a) a disregard for cash flows after the payback period.
 - (b) only an implicit consideration of the timing of cash flows.
 - (c) the difficulty of specifying the appropriate payback period.
 - (d) it uses cash flows, not accounting profits.

Continued...

- 11) A firm is evaluating a proposal which has an initial investment of RM50,000 and has cash flows of RM15,000 per year for five years. The payback period of the project is
- (a) 1.5 years.
 - (b) 2 years.
 - (c) 3.3 years.
 - (d) 4 years.
- 12) A firm would accept a project with a net present value of zero because
- (a) the project would maintain the wealth of the firm's owners.
 - (b) the project would enhance the wealth of the firm's owners.
 - (c) the return on the project would be positive.
 - (d) the return on the project would be zero.
- 13) _____ projects do not compete with each other; the acceptance of one _____ the others from consideration.
- (a) Capital; eliminates
 - (b) Independent; does not eliminate
 - (c) Mutually exclusive; eliminates
 - (d) Replacement; does not eliminate
- 14) A firm with limited dollars available for capital expenditures is subject to
- (a) capital dependency.
 - (b) mutually exclusive projects.
 - (c) working capital constraints.
 - (d) capital rationing.
- 15) _____ costs are a function of volume, not time.
- (a) Fixed operating
 - (b) Semi-variable
 - (c) Variable
 - (d) Fixed financial

Continued...

- 16) The firm's _____ is the level of sales necessary to cover all operating costs, i.e., the point at which $EBIT = RM0$.
- (a) cash breakeven point
 - (b) financial breakeven point
 - (c) operating breakeven point
 - (d) total breakeven point
- 17) Net working capital is defined as
- (a) a ratio measure of liquidity best used in cross-sectional analysis.
 - (b) the portion of the firm's assets financed with short-term funds.
 - (c) current liabilities minus current assets.
 - (d) current assets minus current liabilities.
- 18) When a portion of the firm's fixed assets are financed with current liabilities, the firm
- (a) has positive net working capital.
 - (b) has negative net working capital.
 - (c) has excessive amounts of current assets.
 - (d) is in a low-risk position.
- 19) Accruals and accounts payable are _____ sources of short-term financing.
- (a) negotiated, secured
 - (b) negotiated, unsecured
 - (c) spontaneous, secured
 - (d) spontaneous, unsecured
- 20) The cost of giving up a cash discount on a credit purchase is
- (a) added on to the price of the goods.
 - (b) deducted from the price of the goods.
 - (c) the implied interest rate paid in order to delay payment for an additional number of days.
 - (d) the true purchase price of the goods.

Continued...

Section B: Structured Questions (60%). Answer ALL the questions.**Question 1 (15 marks)**

- (a) A firm has experienced a constant annual rate of dividend growth of 9 percent on its common stock and expects the dividend per share in the coming year to be RM2.70. The firm can earn 12 percent on similar risk involvements. What is the value of the firm's common stock?

(5 marks)

- (b) A common stock currently has a beta of 1.3, the risk-free rate is an annual rate of 6 percent, and the market return is an annual rate of 12 percent. The stock is expected to generate a constant dividend of RM5.20 per share. A toxic spill results in a lawsuit and potential fines, and the beta of the stock jumps to 1.6. What is new equilibrium price of the stock?

(10 marks)

Question 2 (20 marks)

A firm has determined its optimal capital structure which is composed of the following sources and target market value proportions.

Source of Capital	Target Market Proportions
Long-term debt	20%
Preferred stock	10
Common stock equity	70

Debt: The firm can sell a 12-year, RM1,000 par value, 7 percent bond for RM960. A flotation cost of 2 percent of the face value would be required in addition to the discount of RM40.

Preferred Stock: The firm has determined it can issue preferred stock at RM75 per share par value. The stock will pay a RM10 annual dividend. The cost of issuing and selling the stock is RM3 per share.

Common Stock: A firm's common stock is currently selling for RM18 per share. The dividend expected to be paid at the end of the coming year is RM1.74. Its dividend payments have been growing at a constant rate for the last four years. Four years ago, the dividend was RM1.50. It is expected that to sell, a new common stock issue must be underpriced RM1 per share in flotation costs. Additionally, the firm's marginal tax rate is 40 percent.

Calculate the weighted average cost of capital (WACC).

(20 marks)

Continued...

Question 3 (10 marks)

What is the NPV for the following project if its cost of capital is 15 percent and its initial after tax cost is RM5,000,000 and it is expected to provide after-tax operating cash inflows of RM1,800,000 in year 1, RM1,900,000 in year 2, RM1,700,000 in year 3 and RM1,300,000 in year 4? Should the firm accept or reject the project and why?

(10 marks)

Question 4 (15 marks)

(a) A firm purchased raw materials on account and paid for them within 30 days. The raw materials were used in manufacturing a finished good sold on account 100 days after the raw materials were purchased. The customer paid for the finished good 60 days later. Calculate the firm's cash conversion cycle.

(5 marks)

(b) The General Chemical Company uses 150,000 gallons of hydrochloric acid per month. The cost of carrying the chemical in inventory is 50 cents per gallon per year, and the cost of ordering the chemical is RM150 per order. The firm uses the chemical at a constant rate throughout the year. It takes 18 days to receive an order once it is placed. Calculate the reorder point.

(5 marks)

(c) A&A Company purchased a new machine on October 20th, 2018 for RM 1,000,000 on credit. The supplier has offered A&A terms of 2/10, net 45. The current interest rate the bank is offering is 16 percent. Compute the cost of giving up cash discount. Should the firm take or give up the cash discount?

(5 marks)

The End of Page

BFN1014 Financial Management I
Selected Formulas

$$P_0 = \frac{D_1}{r_s - g}$$

$$NPV = \sum_{i=1}^N \frac{CF_i}{(1+r)^i} - CF_0$$

$$r_d = \frac{I + \frac{1000 - N_d}{n}}{\frac{N_d + 1000}{2}}$$

$$WACC (r_a) = w_i r_i + w_p r_p + w_s r_{sORn}$$

$$DOL \text{ at base sales level } Q = \frac{Q \times (P - VC)}{Q \times (P - VC) - FC}$$

$$DFL \text{ at base EBIT} = \frac{EBIT}{EBIT - I - (PD \times 1/[1 - T])}$$

$$EOQ = \sqrt{\frac{2 \times S \times O}{C}}$$

$$OC = AAI + ACP$$

$$CCC = OC - APP$$

$$\text{Cost of giving up cash discount} = \frac{CD}{100\% - CD} \times \frac{365}{N}$$

Present Value and Future Value Tables

Table A-1 Future Value Interest Factors for One Dollar Compounded at k Percent for n Periods: $FVIF_{k,n} = (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.4040	1.5376	1.5625	1.6900
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.7280	1.9066	1.9531	2.1970
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8105	2.0736	2.3642	2.4414	2.8561
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.4883	2.9316	3.0518	3.7129
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5868	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.9860	3.6352	3.8147	4.8258
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600	2.8262	3.5832	4.5077	4.7684	6.2749
8	1.0829	1.1717	1.2688	1.3666	1.4755	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4760	2.6584	2.8526	3.0590	3.2784	4.2998	5.5895	5.9605	8.1973
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179	3.8030	5.1598	6.9310	7.4506	10.504
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	6.1917	8.5944	9.3132	13.786
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3318	2.5804	2.8531	3.1518	3.4785	3.8359	4.2262	4.6524	5.1173	7.4301	10.657	11.642	17.922
12	1.1268	1.2682	1.4258	1.6010	1.7969	2.0122	2.2522	2.5182	2.8127	3.1364	3.4985	3.8960	4.3345	4.8179	5.3503	5.9360	8.9161	13.215	14.552	23.298
13	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8958	10.699	16.386	18.190	30.288
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2608	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2613	7.0757	7.9875	12.839	20.319	22.737	39.374
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3986	2.7590	3.1722	3.6426	4.1772	4.7848	5.4736	6.2543	7.1379	8.1271	9.2855	15.407	26.196	28.422	51.186
16	1.1726	1.3726	1.6047	1.8730	2.1829	2.5404	2.9622	3.4589	3.9703	4.5960	5.3109	6.1304	7.0873	8.1372	9.3578	10.748	18.488	31.243	35.527	86.542
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1688	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.761	12.458	22.186	38.741	44.409	106.504
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5436	7.6900	9.0243	10.575	12.375	14.463	26.623	48.039	55.811	112.455
19	1.2081	1.4568	1.7335	2.1088	2.5270	3.0256	3.6158	4.3157	5.1417	6.1159	7.2633	8.6128	10.197	12.056	14.232	16.777	31.948	59.588	69.388	146.192
20	1.2202	1.4859	1.8661	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6493	11.623	13.743	16.367	19.461	38.338	73.864	86.736	190.050
21	1.2324	1.5157	1.8803	2.2788	2.7860	3.3996	4.1408	5.0338	6.1088	7.4002	8.9492	10.804	13.021	15.688	18.822	22.574	46.006	91.592	108.420	247.065
22	1.2447	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4255	6.6586	8.1403	9.9336	12.100	14.714	17.861	21.645	26.186	56.208	113.574	136.826	321.184
23	1.2572	1.5769	1.9736	2.4647	3.0715	3.8187	4.7405	5.8115	7.2579	8.9643	11.028	13.552	16.627	20.382	24.891	30.378	68.247	140.831	169.407	417.539
24	1.2697	1.6084	2.0328	2.5633	3.2281	4.0488	5.0724	6.2412	7.9111	9.9487	12.339	15.178	18.788	23.212	28.628	35.236	79.497	174.631	211.758	542.801
25	1.2824	1.6406	2.0936	2.6658	3.3964	4.2919	5.4274	6.6485	8.6231	10.835	13.585	17.000	21.231	26.462	32.919	40.874	96.386	216.542	264.698	705.641
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.063	13.268	17.449	22.892	29.860	39.115	50.860	66.212	85.860	237.378	634.820	807.794	*
35	1.4166	1.9939	2.8129	3.9451	5.6160	7.8861	10.877	14.785	20.414	28.102	38.575	52.800	72.068	98.100	133.175	180.314	590.668	*	*	*
36	1.4308	2.0399	2.8963	4.1039	5.7918	8.1473	11.424	15.968	22.351	30.813	42.818	59.135	81.437	111.834	153.182	209.164	708.802	*	*	*
40	1.4889	2.2080	3.2620	4.8010	7.0400	10.285	14.974	21.725	31.499	48.269	68.001	93.061	132.782	188.884	267.894	378.721	*	*	*	*
50	1.6446	2.8516	4.3839	7.1067	11.457	18.420	29.467	46.802	74.358	117.391	184.585	289.002	450.736	700.233	*	*	*	*	*	*

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at k Percent for n Periods: $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500	2.1600	2.2000	2.2400	2.2500	2.3000
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100	3.3421	3.3744	3.4069	3.4396	3.4725	3.5056	3.6400	3.7776	3.8128	3.9800
4	4.0604	4.1216	4.1838	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410	4.7097	4.7793	4.8498	4.9211	4.9934	5.0665	5.3680	5.6842	5.7656	6.1870
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101	6.7424	6.8771	7.4416	8.0484	8.2070	9.0431
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7155	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.8299	10.980	11.259	12.756
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3936	8.6540	8.9228	9.2004	9.4872	9.7833	10.088	10.405	10.730	11.067	11.414	12.316	14.815	15.073	17.583
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8978	10.260	10.637	11.028	11.436	11.859	12.290	12.757	13.233	13.727	14.240	16.499	19.123	19.842	23.658
9	9.3885	9.7546	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.519	20.798	24.712	25.802	32.016
10	10.482	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.548	18.420	19.337	20.304	21.321	25.659	31.843	33.283	42.619
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.550	18.501	19.501	20.551	21.654	22.812	24.026	25.298	30.744	38.816	40.686	51.405
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.002	30.850	37.581	47.896	50.156	63.227
13	13.809	14.680	15.616	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212	28.029	29.985	32.089	34.352	36.786	44.997	57.810	60.626	77.225
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505	43.672	53.996	69.496	72.849	93.193
15	16.097	17.293	18.599	20.024	21.579	23.276	25.128	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.580	51.660	64.035	82.815	86.887	111.286
16	17.258	18.639	20.167	21.825	23.627	25.673	27.888	30.324	33.003	35.950	39.190	42.733	46.672	50.980	55.717	60.925	75.442	97.811	102.109	132.472
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.884	53.739	59.118	65.075	71.673	90.931	117.253	120.635	156.014
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	50.395	55.750	61.725	68.394	75.836	84.141	104.117	135.994	142.045	184.518
19	20.811	22.841	25.117	27.671	30.639	33.760	37.379	41.448	46.016	51.159	56.939	63.440	70.749	78.969	88.212	98.603	121.740	158.033	165.356	215.973
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.203	72.052	80.947	91.025	102.444	115.380	142.888	185.601	194.945	253.165
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.699	92.470	104.768	118.810	134.841	167.026	215.973	225.026	293.199
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.467	62.873	71.403	81.214	92.503	105.491	120.436	137.632	157.415	201.031	260.506	271.031	358.101
23	25.716	28.845	32.453	36.616	41.430	46.995	53.436	60.893	69.532	79.543	91.148	104.603	120.205	138.297	159.279	183.601	232.237	302.630	313.626	411.931
24	26.973	30.422	34.425	39.083	44.502	50.815	58.177	66.765	76.790	88.497	102.174	118.155	136.831	158.659	184.168	213.978	274.484	358.461	370.461	488.033
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	114.413	133.334	155.920	181.871	212.793	249.214	321.981	418.092	431.092	568.033
26	29.533	33.620	38.500	44.000	50.333	57.633	67.000	78.000	90.000	104.000	120.000	138.000	160.000	186.000	216.000	252.000	328.000	428.000	448.000	592.000
27	30.843	35.310	40.600	46.333	53.000	60.667	71.000	83.000	96.000	110.000	126.000	145.000	168.000	196.000	228.000	274.000	360.000	468.000	488.000	640.000
28	32.173	36.940	42.600	48.667	56.000	64.000	76.000	89.000	103.000	118.000	135.000	155.000	180.000	210.000	244.000	292.000	388.000	508.000	528.000	692.000
29	33.523	38.590	44.500	50.833	58.667	67.000	80.000	94.000	109.000	125.000	143.000	164.000	190.000	222.000	260.000	308.000	408.000	538.000	558.000	732.000
30	34.893	40.240	46.400	52.833	61.000	70.000	84.000	99.000	115.000	132.000	151.000	173.000	200.000	234.000	274.000	322.000	422.000	552.000	572.000	756.000
31	36.283	41.990	48.400	54.833	63.667	73.000	88.000	104.000	121.000	139.000	159.000	182.000	210.000	246.000	288.000	336.000	446.000	586.000	606.000	800.000
32	37.693	43.740	50.000	56.833	66.000	76.000	92.000	109.000	127.000	146.000	167.000	191.000	220.000	258.000	302.000	350.000	460.000	600.000	620.000	824.000
33	39.123	45.590	51.900	58.833	68.667	79.000	96.000	114.000	133.000	153.000	175.000	200.000	230.000	270.000	314.000	362.000	472.000	612.000	632.000	848.000
34	40.573	47.440	53.800	60.833	71.000	82.000	100.000	119.000	139.000	160.000	182.000	208.000	238.000	280.000	324.000	372.000	482.000	622.000	642.000	862.000
35	42.043	49.290	55.700	62.833	73.667	85.000	104.000	124.000	145.000	167.000	190.000	216.000	246.000	288.000	332.000	380.000	490.000	630.000	650.000	876.000
36	43.533	51.140	57.600	64.833	76.000	88.000	108.000	129.000	151.000	174.000	198.000	224.000	254.000	296.000	340.000	388.000	500.000	640.000	660.000	890.000
37	45.043	53.090	59.600	66.833	78.667	91.000	112.000	133.000	156.000	180.000	204.000	230.000	260.000	302.000	346.000	394.000	506.000	646.000	666.000	904.000
38	46.573	55.040	61.600	68.833	81.000	94.000	116.000	139.000	162.000	186.000	210.000	236.000	266.000	308.000	352.000	398.000	508.000	648.000	668.000	918.000
39	48.123	57.090	63.600	70.833	83.667	97.000	120.000	143.000	168.000	192.000	216.000	242.000	272.000	314.000	358.000	402.000	510.000	650.000	670.000	932.000
40	49.693	59.140	65.600	72.833	86.000	100.000	124.000	147.000	172.000	196.000	222.000	248.000	278.000	320.000	364.000	408.000	512.000	652.000	672.000	946.000
41	51.283	61.290	67.600	74.833	88.667	103.000	128.000	151.000	176.000	200.000	226.000	252.000	282.000	324.000	368.000	412.000	514.000	654.000	674.000	960.000
42	52.893	63.440	69.600	76.833	91.000	106.000	132.000	155.000	180.000	204.000	230.000	256.000	286.000	328.000	372.000	416.000	516.000	656.000	676.000	974.000
43	54.523	65.590	71.600	78.833	93.667	109.000	136.000	159.000	184.000	208.000	234.000	260.000	290.000	332.000	376.000	420.000	518.000	658.000	678.000	988.000
44	56.173	67.740	73.600	80.833	96.000	112.000	140.000	163.000	188.000	212.000	238.000	264.000	294.000	336.000	380.000	424.000	520.000	660.000	680.000	1002.000
45	57.843	69.890	75.600	82.833	98.667	115.000	144.000	167.000	192.000	216.000	242.000	268.000	298.000	340.000	384.000	428.000	522.000	662.000	682.000	1016.000
46	59.533	72.040	77.600	84.833	101.000	118.000	148.000	171.000	196.000	220.000	246.000	272.000	302.000	344.000	388.000	432.000	524.000	664.000	684.000	1030.000
47	61.243	74.190	79.600	86.833	103.667	121.000	152.000	175.000	199.000	224.000	248.000	274.000	304.000	346.000	390.000	434.000	526.000	666.000	686.000	1044.000
48	62.973	76.340	81.600	88.833	106.000	124.000	156.000	179.000	202.000	228.000	250.000	276.000	306.000	348.000	392.000	436.000	528.000	668.000	688.000	1058.000
49	64.723	78.490	83.600	90.833	108.667	127.000	160.000	183.000	206.000	232.000	254.000	278.000	308.000	350.000	394.000	438.000	530.000	670.000	690.000	1072.000
50	66.493	80.640	85.600	92.833	111.000	130.000	164.000	187.000	210.000	236.000	258.000	280.000	310.000	352.000	396.000	440.000	532.000	672.000	692.000	1086.000

Present Value and Future Value Tables

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5125	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4095	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5068	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8555	0.7914	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3268	0.3050	0.2326	0.1788	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2287	0.1616	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3506	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2384	0.2090	0.1827	0.1599	0.1401	0.1229	0.1078	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2518	0.2178	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3168	0.2703	0.2311	0.1978	0.1696	0.1458	0.1262	0.1078	0.0929	0.0802	0.0461	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4156	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2768	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1488	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0251	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2418	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5218	0.4220	0.3418	0.2778	0.2257	0.1839	0.1502	0.1228	0.1007	0.0825	0.0680	0.0569	0.0462	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0739	0.0601	0.0491	0.0402	0.0329	0.0161	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1974	0.1577	0.1264	0.1015	0.0817	0.0669	0.0532	0.0431	0.0349	0.0284	0.0126	0.0067	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1450	0.1160	0.0923	0.0736	0.0598	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0984	0.0754	0.0573	0.0437	0.0334	0.0266	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	"
35	0.7059	0.5000	0.3564	0.2534	0.1813	0.1301	0.0937	0.0678	0.0490	0.0356	0.0259	0.0188	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	"	"
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	"	"	"
40	0.6717	0.4529	0.3068	0.2083	0.1420	0.0972	0.0688	0.0460	0.0318	0.0221	0.0154	0.0107	0.0076	0.0053	0.0037	0.0026	0.0007	"	"	"
50	0.6080	0.3715	0.2381	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	"	"	"	"

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at k Percent for n Periods: $PVIFA = [1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4568	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7761	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9030	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7136	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6969	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4869	4.3563	4.2309	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4729	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4228	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0187	6.7327	6.4632	6.2098	5.9713	5.7468	5.5348	5.3349	5.1461	4.9678	4.7988	4.6389	4.4873	4.3436	3.8372	3.4212	3.3289	2.9347
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6085	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1448	5.8922	5.6502	5.4262	5.2181	5.0186	4.8322	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2526	8.7605	8.3064	7.8869	7.4997	7.1390	6.8052	6.4951	6.2065	5.9377	5.6889	5.4627	5.2337	5.0266	4.3271	3.7767	3.6664	3.1473
12	11.255	10.575	9.9840	9.3851	8.8633	8.3838	7.9427	7.5351	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4205	5.1971	4.4392	3.8614	3.7251	3.1903
13	12.134	11.348	10.635	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.108	11.296	10.563	9.8985	9.2950	8.7455	8.2442	7.7882	7.3687	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9516	3.8241	3.2487
15	13.865	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5959	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8693	3.2882
16	14.718	13.578	12.561	11.552	10.838	10.108	9.4468	8.8614	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6655	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.168	12.166	11.274	10.477	9.7632	9.1216	8.5435	8.0218	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7745	4.0591	3.9099	3.2948
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.3719	8.7558	8.2014	7.7018	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3156
21	18.857	17.011	15.415	14.029	12.821	11.764	10.838	10.017	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.042	11.081	10.201	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.456	18.292	16.444	14.857	13.469	12.303	11.272	10.371	9.5802	8.8832	8.2654	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.7065	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9371	4.1428	3.9811	3.3272
25	22.023	19.623	17.413	15.622	14.094	12.783	11.654	10.675	9.8225	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.935	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.396	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.952	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333